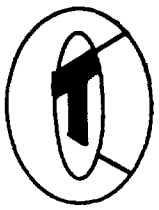

July 11, 1995

Office of the Secretary
Federal Communications Commission
Washington, D.C. 20554

Attention: William F. Caton
Acting Secretary

Dear Mr. Caton:

Enclosed is an original and five (5) copies of **Concepts To Operations, Inc. (CTO)** reply comments on WT Docket 95-47 (RM-8476) "Notice of Proposed Rule Making," concerning mobile services for IVDS.

Sincerely,

Stanley I. Cohn
Executive Vice-President

SIC/csc
Enclosures

CONCEPTS TO OPERATIONS

CORPORATE OFFICES: 801 Compass Way, Suite 217, Annapolis, MD 21401-7813 • (410) 224-8911, D.C. 970-8133, Fax (410) 224-8591

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
Amendment of Part 95 of the Commission's Rules to allow Interactive Video and Data Service licensees to provide mobile service to subscribers	)	WT DOCKET NO. 95-47 RM-8476

To: The Commission

Reply Comments of Concepts To Operations, Inc.

Concepts To Operations, Inc. (CTO) hereby replies to the opening comments filed in response to the Notice of Proposed Rule Making adopted by the Commission in the above-captioned docket.

These reply comments cover considerations of allowable power and duty cycle limitations for mobile and fixed operations, methods of RTU to RTU communications and interference considerations regarding TV Channel 13.

Effective Radiated Power (ERP):

A number of comments concerned ERP limitation of mobile and fixed RTU's, one comment concerned CTS antenna height/power limitations.

Comments on ERP limitations overwhelmingly rejected the motion of reducing the ERP of fixed RTUs from 20 watts (as is now allowed by Section 95.855) to 100 milliwatts. Only a few comments supported a 100 milliwatt limitation on mobile RTUs. As CTO stated in its comments, a 100 milliwatt limitation could exclude use of all but one of the technology vendors equipment.

In connection with power limitation, it is noted that although Section 95.855 specifies a maximum ERP of 20 watts for a CTS or RTU, it does not specify if this is a limitation on peak, average or peak envelope power. Section 95.857 allows for any emission type that complies with the emission standards for unnecessary radiation. It would appear that under these circumstances average power is the most universal measure of ERP. Further, because the bandwidth of a TV receiver is much larger than the maximum IVDS emission bandwidth allowed by the rules, interference effects would tend to depend on average power received from an adjacent channel transmission.

The effect of interference that a viewer observes is dependent on the time during which an adjacent channel source produces visible signals. For a pulse shorter than or equal to the horizontal blanking interval (HBI) the effect would be a bar on a single horizontal line occupying less than 20% of the width of the screen. If this interfering pulse occurred during the HBI no visible effects would be observed.

For pulses longer than the HBI, visible interference effects would be observable depending on the pulse length and when the pulse occurred with respect to the HBI. The effect would be observable as a bar on a small portion of a horizontal line (for short pulses occurring at the time of the HBI) to bars on several lines (for very long pulses).

Thus, if peak power is used, a longer pulse system (while proving more narrowband channels for IVDS) has a greater observable interference effect than a wide-band system, which supports short pulse lengths. If average power is used the long pulse system peak interference level would be reduced and the resulting interference would be less observable.

The Commission should therefore clarify the ERP limitation for CTSs and for both fixed and mobile RTUs. Since the ERP limits are based on interference reduction an average ERP limitation is more appropriate than a peak or peak envelope ERP limitation. With regard to interference to AMTS systems, short pulse length IVDS systems, spread the total power over a wider bandwidth and would have smaller interference effect than a long pulse IVDS system with the same peak power. Again, average ERP limitation would be more appropriate.

The National Action Group comments include a request that the antenna height/power limitation rule be revised to allow for greater powers at higher antenna height at distances greater than 10 miles beyond the Channel 13 Grade B contour.[1]

The current rules[2] are based on height ranges with the ERP being constant within a height range. Under such rules a CTS at an HAAT of 500 feet at 10 miles beyond the Grade B contour can operate at 20 watts, while if the HAAT is 591 feet, only 5 watts ERP is allowed. If the CTS is 9.99 miles outside the Grade B contour only 1.2 watts is allowed at 500 feet HAAT, while only 0.29 watts is allowed at 501 feet HAAT. Each of these location are very close to each other, yet only a small difference (0.01 miles in distance from the Grade B contour and 1 foot in HAAT) can result in a change of allowed ERP from 20 watts to 0.29 watts. An insignificant change in interference potential, but a very large difference in service area would result.

In reviewing the rules the Commission should consider allowing gradual variations in power with antenna height and with distance to the Grade B contour, rather than the present rules which are based on stepped values of range and antenna height. Again the important guiding consideration should be to reduce potential interference conditions and allow the licensee maximum flexibility in achieving this goal.

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1 Page 9 of National Action Group comments.

2 95.859(a)(1) and 95.859(a)(2).

Duty Cycle:

The vast majority of comments suggested that the present duty cycle limitation be relaxed. CTO's original comments noted that mobile RTUs might be operating close to each other and within a short period of time resulting in an increased "apparent" duty cycle.

Section 95.859(d) creates a similar situation by allowing, "In buildings with multiple subscribers (10 or more), RTUs can be connected to a master external antenna." This creates a larger "apparent" duty cycle, which if each RTU transmitted for 1% of the time in any 100 millisecond interval (as currently allowed), would result in continuous transmission if 100 RTUs were connected to the antenna. Although the Commission later eliminated Section 95.859(d), they at the same time modified Section 95.859(c) to allow for the use of external RTU antennas. There is no prohibition on using a common antenna when multiple subscribers are involved. Whether the apparent duty cycle is from one RTU with no duty cycle limitation or all of the RTUs each with a short duty cycle limitation, the end result is the same.

The only limitation in the original or modified rules is that 95.861 applies when external RTU antennas are involved. That section, interalia, places interference control responsibility on the licensee.

As discussed in CTO's comments, the licensee has several means that, singly or in combination, can be used to control interference. To require that the licensee must restrict the duty cycle, unnecessarily restricts the licensees' flexibility in interference control. Another corrective action (other than duty cycle) by the licensee can control interference without limiting the information handling capacity of fixed or mobile RTUs.

Further, the system characteristics also have a tendency to limit the RTU duty cycle. For example, EON in its original petition for mobility indicated that a remote receiver can handle three messages per second.[3] Based on the 32.5 kHz bandwidth of a single channel (which is what the remote receiver handles), only a small RTU duty cycle can be handled unless there are only a very limited number of RTUs associated with a remote receiver.

In the case of markets which do not have Channel 13 interference potential, the duty cycle limitation is an unnecessary factor in controlling interference from mobile or fixed RTUs. Duty cycle limitations are clearly not warranted in such markets or in subareas of the markets where Channel 13 interference potential does not exist.

Direct RTU to RTU Communications:

Several commentors suggested that direct RTU to RTU communication be allowed. If such were the case, the RTUs involved would not be under the control of a local CTS. Interference could then not be controlled by the licensee with regard to Channel 13 and AMTS. More importantly the RTU to RTU transmission could interfer with normal system operations between CTSs and RTUs. Direct RTU to RTU transmission would also allow only

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[3] EON petition; footnote 6 on page 5.

communications at limited ranges because of the low antenna heights that might be involved as well as the building penetration and body absorption problems as discussed in CTO's comments.

RTU to RTU communications can best be handled by the bent-pipe RTU to CTS to RTU method the Commission has proposed in the NPRM. This method will reduce interference potential, to other services, allow the licensee to keep control of interference, remove or reduce the potential of intra system interference between CTS's and RTUs and extend the range of RTU to RTU communications.

Effect of Channel 13 Locations on Interference

SEA in its comments notes that Channel 13 transmitters are authorized in only 67 MSA's and that overlap would only occur in 9.1% of the total markets. While the number of Channel 13 transmitters is correct, the interference effects can occur (usually on a more severe basis) in markets surrounding the market in which the Channel 13 transmitter is located. A few examples (out of many) are the Philadelphia market (which does not contain a Channel 13 transmitter), which has areas in the north which are within the New York Channel 13 Grade B contour and areas in the south within the Baltimore Grade B contour. The Baltimore Channel 13 Grade B contour encompasses parts of the Washington, Wilmington, Philadelphia, Hagerstown MSA's and a number of RSA's. Similar cases can be found for many MSA's and RSA's. Far more than 9.1% of the markets are subject effect of interference from IVDS.

The licensee must be aware of the potential interference effects of his or her system on Channel 13 viewers within his or her service area and assume the responsibility to control interference regardless of whether the Channel 13 transmitter locations are within his or her market or in other markets.

Summary:

Based on a review of the NPRM and the comments submitted by CTO and others, CTO believes that the Commission should modify the IVDS rules along the following lines:

- Allow the addition of ancillary mobile services.
- Base ERP on average power.
- Set mobile RTU ERP limits at the same value as those for fixed RTUs
- Remove unnecessary duty cycle limitations on fixed RTUs and do not place unnecessary duty cycle limitation on mobile RTUs.
- Revise CTS power-antenna height rules and power limitation rules regarding location of CTSs with respect to Channel 13 protected contours to reflect continuously variable values rather than fixed values for ranges of HAAT and within protected contours.

- o Allow RTU to RTU communications via a CTS.

- o Allow maximum flexibility for the licensee to mitigate interference, including use of distances, locations, power, duty cycle, horizontal blanking interval transmission, etc. singly or in combination.

Respectfully submitted,

Concepts To Operations, Inc. (CTO)

By: _____

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Dated: July 11, 1995